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ABSTRACT

In designing the learning process for the comprehensive high school, close attention must be paid to curriculum development, instruction, and assessment. Curriculum theorists have identified definitions of curriculum, forces affecting curriculum adoption, and conceptions of curriculum that provide a framework for a definition of curriculum appropriate for developing new designs for the comprehensive high school. Recommendations for curriculum development are as follows: the curriculum should center around demonstration of learner competence; it should meet diverse student needs; it should represent a common core of concepts, principles, skills, and ways of knowing; and it should show students the connection between school and life. Instructional processes must address individual students' needs and provide an environment conducive to learning for all students. Cooperative learning, brain-based learning, contextual learning, and experiential learning are congruent with this philosophy. Traditionally, student assessments frequently take the form of paper and pencil tests. Sizer's exhibition of mastery philosophy, Archbald and Newmann's philosophy about authentic performances, Wiggin's (1991) establishment of real standards, Spady and Marshall's (1991) thoughts about transformational outcome-based education, Mitchell's (1990) discussion about performance assessment, and the comments of Stasz et al. (1990) about personalizing assessment suggest the existence of well-thought out, progressive alternatives. (Contains 45 references.) (YLB)

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LEARNING PROCESS: INTERACTION OF CURRICULUM, INSTRUCTION, AND ASSESSMENT IN NEW DESIGNS FOR THE COMPREHENSIVE HIGH SCHOOL

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LEARNING PROCESS: INTERACTION OF CURRICULUM, INSTRUCTION, AND ASSESSMENT IN NEW DESIGNS FOR THE COMPREHENSIVE HIGH SCHOOL

Any design for a comprehensive high school must address learning processes from the perspective that the future needs of all students must be met. Although students have different goals, different learning styles, different backgrounds, and different personalities, they all must acquire the knowledge, skills, and abilities that will allow them to be successful in today's world. Currently, the comprehensive high school is under attack for failing to provide an adequate education for students. Some of those criticisms may be justified. In the past, students were expected to learn facts and develop skills, many of which could only be applied very narrowly to specific situations. In the future it will not be as necessary for students to acquire an inventory of facts—after all, facts can be obtained from a data base. In the future, the acquisition of skills and abilities will not be limited to job specific requirements. Today's rapidly changing world requires that students learn to think and to reason, to be flexible and tolerant, and to develop and skills abilities that will allow them to grow and change as the world changes.

In order to meet the needs of today's students, schools will need to review the educational processes that are currently in place. They will need to move from the present system into a future system that meets the needs of today's students. In so doing, there are several issues that need to be addressed. As this new process is developed, careful consideration must be given to all aspects of education, including desired learner outcomes, appropriate learning processes, workable organizational structures, well-managed funding systems, and community and business relationships.

This paper, the third in a series of research and synthesis papers for New Design for the Comprehensive High School, deals specifically with the design of the learning process. Close attention is paid to the development of curriculum, instructional, and assessment processes—the triad of the learning process. Although these three topics will be discussed separately, they are intertwined. Careful and thoughtful consideration must be given to the appropriate alignment of these three parts

Curriculum

Curriculum theorists, according to Portelli (1987), "have traditionally tried to clarify the concept of *curriculum* by proceeding from a review of extant definitions of curriculum to definitions of their own" (p. 354). The first part of this section on curriculum will follow that same format. Initially, in an attempt to clarify the concept of curriculum, several definitions of curriculum will be provided and discussed. In addition, the external and internal forces affecting the adoption of a curriculum will be presented. Next, the conceptions of curriculum as defined by several authors will be contrasted and compared. Finally, based on the above discussion, several curriculum definition questions and issues will be raised for further debate.

The second part of this section on curriculum will provide additional curriculum recommendations gathered from several sources including the National Commission on Excellence in Education (1983); Goodlad (1984); Boyer (1983); Sizer (1984); *America 2000* (U.S. Department of Education, 1991); the Secretary's Commission on Achieving Necessary Skills (1991); and Beck, Copa, and Pease (1991). These sources each supply unique and valuable information that provides some clarity and insight during the curriculum debate.

Defining Curriculum

Curriculum, a term readily used by those who have an interest in the educational system, can be defined in several different ways. The following paragraphs will compare some of those definitions in an attempt to identify consistent and/or prevalent components that can be used to provide a timely definition for the term curriculum. The first two definitions are fairly traditional, probably based on the Ralph Tyler rationale first introduced in 1949; the last two belong to the Reconceptualists. According to Pinar (1988), the Reconceptualists moved the field of curriculum from a practice-oriented field to a theoretical, research-oriented field.

The more traditional practice-oriented definitions are from Beauchamp (1975) and Taba (1962). The first definition, provided by Beauchamp identifies the following three ways in which the term curriculum is used: (a) it is a "written document which may contain many ingredients, but basically it is a plan for the education of pupils during their enrollment in a given school" (p. 7); (b) it is used as a way to refer to a curriculum system

as a sub-system of schooling—the system "within which decisions are made about what the curriculum will be and how it will be implemented" (p. 7); and (c) it identifies a field of study.

A second definition, provided by Taba states that all curricula are composed of the following elements: (a) a statement of aims and specific objectives; (b) some indication of the selection and organization of content; (c) an implication or manifestation for certain patterns of teaching and learning; and, finally, (d) a "program for evaluation of the outcomes" (p. 10).

The definitions representative of the Reconceptualists are from Doll (1988) and Macdonald (1988). Doll defines curriculum "not as the preset order which precedes instruction, but as the process we engage in when we teach and learn with our students" (p. 130). He believes this definition allows teachers to see truth and objectivity from within the system. Macdonald believes the curriculum plan exists in four relationships—persons to subject matter, subject matter to subject matter, society to subject matter and persons to society. Some of the design guidelines for those relationships include a curriculum that is related to needs, interests, past experiences, and capabilities of persons, and which is organized so that "its meaning for the everyday living of people is apparent" and "cognitive and affective relationships within and between usually disparate areas are apparent" (p. 169). In addition, Macdonald believes the importance of the hidden curriculum cannot be overestimated. He feels that the move to return to the basics is a turning away from the hidden curriculum.

The hidden curriculum, according to Macdonald, contains rules that may be changed be preference. He defines those rules as those which "constitute basic boundaries that can be varied if the system or cultural milieu is to retain its integrity and function" (p. 170). Rules against cheating, rules for using the bathroom, and rules that control tardiness all fall within the realm of the hidden curriculum. Macdonald believes these hidden curriculum rules, which frequently affect our perspectives, values, attitudes and morals, should be "brought into everyone's awareness" (p. 170), be made cognitively accessible through analysis and discussion, and be moved into the realm of preference rules. Currently, according to Macdonald:

> . . . the structures are hidden in the sense that their full intent in relation to what constitutes their existence is not revealed in their function. Thus, to many school people and students they seem "natural" rather than arbitrary value commitments. (p. 171)

Portelli (1987), in a discussion of the definition of curriculum, comments that the major definitions of curriculum can be placed in one of the following categories: "(a) curriculum defined in terms of content; (b) curriculum defined in terms of experiences; and (c) curriculum defined in terms of a plan" (p. 357). Curriculum as content recognizes curriculum as a course of studies which students should be taught. William Bennet's curriculum requirements for James Madison High School fall into this category. Curriculum defined in terms of experiences recognizes that all the experiences students have in school are part of the curriculum for that student. Finally, curriculum can be defined as a plan for learning. Although each of these definitions has faults, each provides insight into the concept of curriculum.

Before discussing the elements that are incorporated into those definitions, it appears prudent to consider the forces affecting the adoption of curriculum, the conceptions or orientations of curriculum and the reasons for the different definitions. Each of these ideas will be introduced in the following sections.

Forces Affecting Curriculum

First of all, what forces, external and internal, affect the adoption of a curriculum? Discussions by futurists, reviews of national reports and studies (Phi Delta Kappa, 1983), and a review of current social trends provides an extensive list of forces. The following list of ten forces represent many of the areas discussed in the above sources.

1. Changing family patterns. Current and future characteristics of families include an increase in single parent homes, an increase in women leaving the home to work, and an increased number of children in latch-key homes.

2. Shifts in the labor force. The make-up of the labor force will continue to change as more women become employed and as the minority population increases. In addition, increase in the number of elderly and decrease in the number of youth available for employment will affect the make-up of the labor force.

3. Expanded role of technology. The use of technology will continue to expand, requiring moral and legal choices as labor intensive manufacturing jobs are eliminated and replaced by jobs which require sophisticated technical knowledge.

4. Changing demands of jobs. The shift to an information and service-based economy and the likelihood that workers will need to shift jobs frequently will create new demands on education.

5. Increased interdependence of people. The shrinking of the world through rapid world-wide transportation and advanced technology has created a closer relationship among people. Respect and understanding of diverse cultural backgrounds are essential.

6. Changing social norms and value structures. The liberalized social norms and values and society's demand that schools assume traditional family and church roles causes changes in education.

7. World wide competition and markets. The need for the United States to compete in a world market demands that the nation's educational system improve its standing in comparison to other nations. International markets require a greater knowledge and understanding about the citizens of other countries. The United States is operating in a world economy.

8. Rapid growth of knowledge. Knowledge is currently expanding at a phenomenal rate.

9. Ecological concerns. Pollution and damage to the environment demand attention from policymakers, educators, and citizens.

10. Growing demand for an improved educational system. Demands for an improved educational system are reflected in the calls for national testing, teacher accountability, and the move to transdisciplinary or interdisciplinary education.

The above list of forces affects both the curriculum itself and the definition of the term *curriculum*. What used to be a simple process for identifying specific subject area

content has become a broad and complex process for curriculum development. The term curriculum can no longer be equated to subject matter or discipline. Curriculum has to be defined extensively enough to encompass the changes society demands in education.

Conceptions or Orientations of Curriculum

In addition to developing a definition for the term *curriculum*, curriculum theorists discuss and identify the various conceptions or orientations of curriculum. According to McNeil (1990), "proponents of each conception have different ideas about what should be taught, to whom, when and how" (p. 1). McNeil divides the conceptions or orientations of curriculum into four major categories: humanistic, social reconstructionist, technological, and academic. He defines each of the categories as follows:

1. Humanistic—"the curriculum should provide personally satisfying experiences for each person. The new humanists are self-actualizers, who view curriculum as a liberating process that can meet the need for growth and personal integrity" (p. 1). Humanists believe subject matter "must be brought to life, taught in a way that demonstrates its relevance to the learner" (p. 4).

2. Social Reconstructionists—the curriculum should "stress societal needs over individual differences" (p. 1). Social reconstructionists believe that learning must be real, learners must act on the problem and they must form a "coherent system of values" (p. 33).

3. Technologists—the curriculum must attain its "intended objectives. Technologists focus on the "effectiveness of programs, methods, and materials in the achievement of specified ends or purposes" (p. 51).

4. Academic Approach—the curriculum is seen as "the vehicle by which learners are introduced to subject matter disciplines and organized fields of study" (p. 1). Illustrative academic subjects include the following: English, the arts, mathematics, science, social studies and foreign language.

Other theorists use somewhat different categories. Williams, Stockton and Kimpston (in press) identify eight categories: (a) behaviorism—learning is behavior to be conditioned; (b) educational technology—emphasizes specification of objectives and

evaluation of units of performance; (c) social adaptation—adapting learner to meet needs of society; (d) academic rationalism—enculturing individuals into society; (e) humanism—provide personally satisfying experiences; (f) social reconstruction—leaner can change society; (g) liberation - emancipation of learner through teacher and student dialogue; and (h) transpersonal—cross disciplinary or multi-disciplinary approach to freedom based on openness and wholeness.

Eisner and Vallance (1974) identify five conceptions or orientations of curriculum. They include: (a) academic rationalism—found in the established disciplines; (b) development of cognitive processes—focus on the how rather than the what; (c) curriculum as technology—the packaging and presentation of material is most important; (d) self-actualization—help the learner discover him/herself; and (e) social reconstruction-relevant—learners identify social issues of the day. Brandt (1988) modifies the Eisner and Vallance conceptions as he develops the following six categories: cognitive processes, self-actualization, social participation, structure of knowledge, academic rationalist and utilitarian. And, finally, to conclude this look at curriculum orientations or perspectives, Copa (1992), in a recent analysis, reports that the alternative conceptions or approaches to curriculum could be grouped into five major curriculum perspectives which he labeled: (a) structure of disciplines; (b) technology; (c) social reconstruction; (d) personal meaning; and (e) cognitive process.

The conceptions of curriculum, as defined by the above curriculum theorists, "reflect competing notions about the role of schools in society and differing perceptions of the goals, organizations and content of schooling" (Brandt, 1988, p. 4). However, these conceptions do not always exist in their pure form. They may be combined to provide a more realistic view of curriculum. For example, a combination of McNeil's technology and academic rationalism is probably most typical of curriculum in schools today. Other combinations of conceptions are equally plausible.

Reasons for Different Definitions

Portelli (1987) reports that various definitions for the term *curriculum* result from (a) an attempt to clarify the nature of the concept, and (b) a belief that "clarifying the term curriculum is considered crucial" to the "design, justification, application, and evaluation of a particular curriculum..." (p. 357). Portelli raises the following questions which could also be addressed during the search for a definitive definition:

1. Is curriculum distinct from instruction?

2. What is the relation between curriculum and the plan, objectives, content, method and evaluation?

3. Is the notion curriculum essential to schooling? Does teaching make sense without the notion curriculum?

4. Whom should curriculums be directed toward? Who should decide curriculum matters? What justification is needed to make different curriculums acceptable? (p. 356)

In addition to Portelli's questions, the following issues need to be addressed:

1. What consistent or prevalent components should be included in a definition for curriculum?

2. How do the orientations or conceptualizations affect the development of the curriculum?

Curriculum Defined

With the above questions acting as guidelines and the definitions, forces, and conceptions providing a framework, the following definition of curriculum seems most appropriate for the purpose of developing new designs for the comprehensive high school: Curriculum is a selected body of knowledge and experience that is acquired and applied by a learner during the instructional process and purposeful and useful to the learner in real life situations. It is cross-disciplinary or multi-disciplinary and requires an open or whole process of instruction. The elements of this definition can be explained in the following manner. First of all, it recognizes that there is a body of organized knowledge contained in the curriculum—the structure of the knowledge is important. Second, that body of knowledge is not all inclusive; obviously students can't learn all there is to know. It is, instead, knowledge selected from the entire body of knowledge. Third, it recognizes that knowledge crosses disciplines and is not subject specific.

And, finally, it identifies the need for a whole and integrated instructional process that doesn't create a piecemeal, segregated educational menu.

The broad societal demands and forces provide the base for an integrated curriculum that recognizes wholeness and comprehensive experience. In addition, the integrated curriculum meets the need to have the knowledge and experience acquired through education connect to the integrated experiences in real life situations. Changes in family structure, labor force, technology, jobs, norms and values, knowledge, and ecology demand that the curriculum not be separated into separate subject areas with a single emphasis. Integration, wholeness, openness, along with a positive attitude toward other people, cultures, social groups and nature are essential to meet the demands of today's society.

As Williams, Stockton, and Kimpston point out, "there is obviously too much knowledge to be mastered by any individual, therefore the selection and organization of knowledge must be based on other than total mastery of all that is known" (p. 9). A definition of curriculum must recognize the fact that students cannot learn everything. In addition, the definition must reflect current societal forces and consider specific orientations to curriculum. The definition advanced in this paper moves toward meeting those demands and provides a direction for curriculum decisions.

Curriculum Recommendations

In response to some of the above questions, and to provide further clarification for the curriculum debate, information from research reports and national studies needs to be considered. This section of this report includes curriculum recommendations gleaned from *A Nation at Risk* (National Commission on Excellence in Education, 1983), *A Place Called School* (Goodlad, 1984), *Horace's Compromise* (Sizer, 1984), *High School* (Boyer, 1983), *America 2,000* (U.S. Department of Education, 1991), *What Work Requires of Schools* (Secretary's Commission on Achieving Necessary Skills, 1991), and "An Uncommon Education: Collaborations Between Vocational and Academic Teachers" (Beck, Copa, & Pease, 1991). Each of these sources provides valuable insights for the curriculum discussion.

In 1983, the National Commission on Excellence in Education issued a report which can now be considered the driving force behind the current demand for school

reform. This report, entitled *A Nation at Risk*, found that the declines in educational performance were "in large part the result of disturbing inadequacies in the way the educational process itself is often conducted" (p. 18). The Commission made several recommendations that needed to be implemented to, according to them, "promise lasting reform" (p. 23). Some of those recommendations relate specifically to the high school curriculum. For example, the report emphasizes that "the variety of student aspirations, abilities, and preparations requires that appropriate content be available to satisfy diverse needs" (p. 24). Although it defines the minimum high school curriculum using an academic approach, i.e., "(a) four years of English; (b) three years of mathematics; (c) three years of science; (d) three years of social studies; and (e) one-half year of computer science" (p. 24), it also recognizes that to meet diverse student needs "the high school curriculum also should provide students with programs requiring rigorous effort in subjects that advance students' personal, educational, and occupational goals, such as the fine and performing arts and vocational education" (p. 26). The Commission's recommendations need to be considered during the curriculum discussion.

Soon after *A Nation at Risk* was released, Goodlad, (1984), reported that the trend at the national, state, and local levels was toward "greater specification of the subject requirements for high school graduation" (p. 285), specifically more years of science and math. However, he believed that without changes in pedagogy, the dropout rate would increase as a result of the additional requirements. He argued against increased requirements and, instead, recommended "better balance among fields of study and greater commonness of study in these fields" (p. 286).

He felt that the "five fingers of human knowledge and organized experience"—mathematics and science, literature and language, society and social studies, the arts, and the vocations—should be included in the common studies. Goodlad preferred the following balance in a student's program: eighteen percent in mathematics and science, eighteen percent in literature and language, fifteen percent in society and social studies, fifteen percent in the arts, fifteen percent in the vocations, and ten percent in physical education. The remaining ten percent would be for individual choice—Goodlad called it the sixth domain and predicted that this domain may be the "most significant of all in determining life-long commitments and accomplishments" (p. 287).

Although instruction in this sixth domain could be provided outside of the school setting, it could also be obtained within the school. Goodlad believed there could be a "limited array of electives" (p. 287) offered; however, at least two-thirds of all programs would be common. Although Goodlad identified the subjects in the core, it is interesting to note that he argued against a common set of topics. Instead he proposed a common set of concepts, principles, skills, and ways of knowing represented in the core curriculum. It would appear that these concepts, principles, and skills could be identified as learner outcomes.

Even though Goodlad endorses the common core concept he does raise several interesting concerns surrounding his recommendation. For example, if curriculum continues to be defined in a discipline specific manner, one concern is that students would be limited in their degree of choice. For example, a student gifted in mathematics or the arts would be restricted in the pursuit of those areas as a result of curricular requirements in other areas. If, however, outcomes rather than disciplines defined the curriculum, Goodlad's concern could be somewhat alleviated. In addition to the above example, Goodlad also recognizes that affluent families would be able to provide extended opportunities beyond those available to poor families.

When Sizer discussed the current high school curriculum, he reported that "what is supposed to be picked up is remarkably consistent among all sorts of high schools" (p. 80). Schools mandate three of every five subjects and the mandates are usually in the areas of English, social studies, mathematics, science and physical education. He, like Goodlad, predicted that the time allotted to science and mathematics is on the increase. Sizer argued that the subjects are not clearly defined nor is there any rationale for them; subject titles cover a multitude of things. Sizer lamented the fact that "covering within subjects is the key priority" (p. 81). He expressed concern about the integration of curriculum,

> If some imaginative teacher makes a proposal to force the marriage of, say, mathematics and physics or to require some culminating challenges to students to use several subjects in the solution of a complex problem, and if this proposal will take `time' away from other things, opposition is usually phrased in terms of what may be thus forgone. (p. 81)

Finally, Sizer commented about the lack of connection between stated goals and the goals inherent in schools. He found that there was a real discrepancy between goals such as "self-realization and mental and physical growth" and actual practice in school learning.

Sizer concluded his discussion about curriculum with the following, somewhat cynical, comments: "the students are happy taking subjects," "the parents are happy, because that's what they did in high school," "the rituals, the most important of which is graduation, remain intact," "the adolescents are supervised, safely and constructively most of the time," and "they are off the labor market."

Reacting to the dilemma of Horace, and others like him, Sizer encouraged several school restructuring activities. These school restructuring activities were facilitated through Sizer's Coalition of Essential Schools. Some of these schools, experimenting with various methods for educational improvement, have integrated their curriculum and practiced site-based decision making. Although schools are encouraged by Sizer to develop unique instructional programs, these coalition schools would act as lighthouses for many future school restructuring efforts.

Boyer (1983), like Sizer, concerned about the current education systems, suggested "an agenda for action." His agenda included the following recommendation: "School goals should focus on mastery of language, on a core of common learning, on preparation for work and further education, and on community and civic service" (p. 301). This goal has obvious implications for curriculum and Boyer spells those out in some detail. His recommendations include: (a) the need for skill in written and oral English; (b) the need to acquire a core of common learning which includes "strengthening the traditional courses in literature, history, mathematics and science, and an emphasis on foreign language, the arts, civics, non-Western studies, technology, the meaning of work and the importance of health" (p. 303); (c) the need to provide a transition from school to work and further education; and (d) the need to help students meet social and civic obligations through a service requirement.

America 2000 (U.S. Department of Education, 1991), outlines a plan to move toward the six national goals that were adopted by the president and the governors. These national goals have several implications for the high school curriculum. Goal three requires that students who leave grades four, eight, and twelve must have demonstrated competency in the core subjects of English, mathematics, science, history, and geography, which suggests an academic curriculum orientation. It is interesting to note that when the *Nation at Risk* report was issued, the high school requirements were stated in terms of time requirements. Now, with *America 2000*, students are not given time requirements; instead,

they are required to demonstrate competency. This requirement provides added flexibility to the curriculum as it is entirely possible for the concepts to be taught in an interdisciplinary class or for students to acquire the knowledge outside the classroom.

Other areas mentioned in the national goals and which need to be addressed through the curriculum are preparation for responsible citizenship and productive employment in a global economy. The "Accountability Package" that will be used to measure and compare results requires that standards be developed. These standards will define what "young Americans need to know and be able to do if they are to live and work successfully in today's world" (p. 21). The need to be prepared for further employment and/or work is a focus of the *America 2000* report and will need to be used as a guideline for curriculum development in the future.

Beck, Copa, and Pease (1991) studied another approach for looking at curriculum. They reported on the undertakings of several teachers in two separate high schools to integrate vocational and academic curriculum. These teachers based their decisions "on their perceptions of the high school goals, the students' needs, and their experience with interdisciplinary teaching" (p. 2). Beck, Copa, and Pease found that the interdisciplinary curriculums used by those teachers were developed using a variety of theoretical approaches (approaches originally described by Plihal, Johnson, Bentley, Morgaine, & Liang, 1992). The approaches included: (a) reinforced curriculum—using supplemental materials to "remediate or enrich the content of an existing class;" (b) correlated curriculum—teachers making connections between subjects to encourage understanding; (c) fused curriculum—new subject created from two or more subjects; (d) broad field curriculum—builds on several content areas that relate to a specific or common goal; and (e) core curriculum—which organizes learning according to identified problems. These integrated approaches to curriculum give students the opportunity to understand the connectedness between the concepts which, in the past, have been taught as discrete, unrelated subject areas.

One final document which provides clear implications for curriculum is the report of the Secretary's Commission on Achieving Necessary Skills, (SCANS, 1991). This report identifies three foundations skills and five competencies that all students need as they go to work or go on to school. The five competencies include abilities to: (a) identify, organize, plan and allocate resources; (b) work with others; (c) acquire and use information; (d)

understand complex systems; and (e) work with a variety of technologies. The foundations are basic skills, thinking skills, and personal qualities. The authors of the report request that the competencies and foundations be injected "into every nook and cranny of the school curriculum" (p. ix). According to the report, students currently see little connection between what they do in school and what they will do to earn a living. The authors of this report believe that "teachers and schools must begin early to help students see the relationships between what they study and its applications in real-world contexts" (p. 19). To do that, they recommend that learning be placed within real environments so that students can apply what they have learned in the abstract.

Based on this review of curriculum recommendations, the following conclusions seem apparent. First, there has been movement from a time-based curriculum requirement to a requirement to demonstrate competence. Second, the curriculum must meet diverse student needs in personal, educational, and occupational areas. Third, a diversity in pedagogy rather than additional requirements is required to address student needs. Fourth, a balanced curriculum and commonness of study may be necessary. Fifth, a concept or learner outcome based curriculum could use an interdisciplinary approach to meet student needs. And, finally, students need to understand the relationship between what they learn in school and what they will need to know to live well.

Conclusions About Curriculum

Researchers who are interested in theory usually focus on curriculum theorists' curriculum definitions, curriculum development, and curriculum orientations or conceptions. In addition, research has provided several recommendations for curriculum development. The following statements summarize some of that information.

- Several definitions for the term curriculum have been developed. The traditional definitions recognize curriculum as a practice-oriented field. The Reconceptualists identify curriculum as a theoretical, research- oriented field.

- Some of the external and internal forces affecting the adoption of a curriculum include changing family patterns, shifts in the labor force, expanded role of technology, changing demands of jobs, increased interdependence of people, changing social norms and value structure, world wide competition and markets,

rapid growth of knowledge, ecological concerns, and growing demand for an improved educational system.

- The conceptions or approaches to curriculum can be grouped into five major curriculum perspectives: structure of disciplines, technology, social reconstruction, personal meaning, and cognitive process.

- The following definition of curriculum seems a good starting place: Curriculum is a selected body of knowledge and experience that is acquired and applied by a learner during the instructional process and is purposeful and useful to the learner in real life situations. It is cross-disciplinary or multidisciplinary and requires an open or whole process of instruction.

- The current curriculum discussion centers around the demonstration of learner competence rather than the accumulation of time spent on a subject.

- The curriculum must meet diverse student needs in personal, educational and occupational areas.

- Changes in pedagogy are more important than simply increasing or adding requirements.

- A common core of concepts, principles, skills, and ways of knowing should be represented in the curriculum.

- The common core can be taught using an interdisciplinary approach. These integrated approaches allow students to understand the connectedness between the concepts that in the past have been taught as discrete subjects.

- Students need to recognize the connection between the learning they do in school and its relationship to what they will do to live well.

Instruction

An outcome based educational system usually recommends the alignment of three basic elements: learner outcomes, assessment and feedback, and instruction by the teacher. The Secretary's Commission on Achieving Necessary Skills (SCANS) states that educators, i.e., teachers, have to instill in students the perspective on results that the SCANS skills demand. *America 2000* discusses the establishment of Governors' Academies for Teachers "so that teachers of the five core subjects in every state will be ready to help their students" (p. 23) reach established standards and pass achievement tests. In each of these instances the focus is on the teacher to provide the instruction. The teacher is charged with the mission of transferring the information to the student. The student's needs or, better yet, the learner's needs (the difference will be explained later) are often slighted during the discussions that surround the teacher's role in the restructuring of the educational system.

The focus of this paper will be on the learner and the need for knowledge and skills to become part of the learner's possessions. In the following examples, the learner will be the acting party, acquiring and owning information—the teacher will be a facilitator of the learning. Adler, in *Paideia Proposal*, concluded that "all genuine learning is active, not passive. It involves the use of the mind, not just the memory. It is a process of discovery in which the student is the main agent, not the teacher" (p. 50). Goodlad reports:

> The modal classroom configurations which we observed looked like this: the teacher explaining or lecturing to the total class or a single student, occasionally asking questions requiring factual answers; the teacher, when not lecturing, observing or monitoring students working individually at their desks; students listening or appearing to listen to the teacher and occasionally responding to the teacher's questions, students working individually at their desks on reading or writing assignments; and all with little emotion, from interpersonal warmth to expressions of hostility. (p. 230)

Goodlad goes on to report that students are not engaged with knowledge or using their full range of intellectual abilities. The comments of Adler and Goodlad demonstrate the fact that frequently the teacher has been the instructor, the presenter of information; the student a listener, passively receiving the instruction. The term learner connotes active acquisition of knowledge. Therefore, the following examples will focus on an active acquisition of knowledge, and the term *learner* rather than *student* will be used.

Instructional Processes

Throughout the discussion in this section, the student will be the focal point. The teacher and the instructional processes will be addressed by looking at the needs of the student. Several instructional processes congruent with this philosophy will be introduced and briefly discussed. These processes include learning styles, cooperative learning, brain-based learning, multiple intelligences, contextual learning, experiential learning, higher-order thinking, and thoughtful learning. Although these learning processes have elements in common with one another, each has unique characteristics, which need to be addressed separately.

Learning Styles

According to Dunn and Griggs (1988) the educational system is "ineffective because it does not respond to the many different ways in which healthy, normal, and motivated students absorb, process, and retain difficult information and skills" (p. 2). Learning styles are defined as a "biologically and developmentally imposed set of characteristics that make the same teaching method wonderful for some and terrible for others" (p. 3). Learners within a classroom have a variety of learning styles. Several learning styles instruments such as the Myers-Briggs Type Indicator, the Kolb Learning Styles Inventory, the Grasha-Reichmann Learning Styles Questionnaire and the Inventory of Learning Processes can be used to assess the different learning styles of students.

The 4MAT System, developed by McCarthy (1990), is an example of a process that can be used accommodate learning styles. It is an eight-step cycle for instruction that is based on the major premise that people have hemispheric processing preferences and that instructional strategies can be developed to teach to those preferences. McCarthy states that this learner- focused model adapts curriculum and instruction to the needs of students. McCarthy's system is one of many models that focus on differences in individual learning styles.

Several years ago, Jacobs and Fuhrmann (cited in Kirrane, 1988) developed companion learner-trainer style inventories. According to them, attention to learning styles and matching these styles to trainer/instructor behaviors would enhance the likelihood of learning.

As is obvious from the previous information, there have been many learning style theories. In a recent interview reported in *Educational Leadership* (Brandt, 1990), Guild recommends that teachers use several different learning style models to meet student needs.

Cooperative Learning

According to Johnson, Johnson, and Holubec (1986), cooperative learning is an old idea that needs to be included in present day education. They report that throughout history, educators have used cooperative learning groups to reach educational goals. Advocates of cooperative learning have, in the past, included Colonel Francis Parker, John Dewey, and, more recently, Robert Slavin and William Glasser. Cooperative learning is described by Johnson and Johnson as learning situations where "there is a positive interdependence among students' goal attainments; where students perceive that they can reach their learning goals, if and only if, the other students in the learning group also reach their goals" (p. 4); and which allows learners to actively learn knowledge and skills in a "realistic setting of having to work cooperatively with their classmates" (p. 11). They warn that cooperative learning is not simply placing students near one another; it requires a cooperative goal structure that leads to a promotive pattern among students. Cooperative learning experiences "tend to promote higher achievement than do competitive and individualistic learning experiences" (p. 23-24).

Brain-Based Learning

In *Teaching and the Human Brain*, Caine and Caine (1991) comment that "brain research establishes and confirms that multiple complex and concrete experiences are essential for meaningful learning and teaching" (p. 5). They believe that students learn from their entire ongoing experience with every current event, knowledge, or behavior being linked or connected to past learned or stored information. They suggest that learners must be exposed to content and context—immersed in learning, engaged in talking, listening, reading, viewing, acting, and valuing. According to Caine and Caine, learners can acquire two types of knowledge—surface knowledge and meaningful knowledge. The former is traditional education; the latter is necessary for the 21st century. They report that brain-based learning involves two components: (1) designing and orchestrating lifelike, enriching, and appropriate experiences for learners, and (2) ensuring that students process experience in such a way as to increase the extraction of meaning.

They give several examples of brain-based teaching including the Highstown High School humanities program with its integrated curriculum, Susan Kovalik's group of over forty-five schools that have implemented an integrated thematic approach, and the Colorado School of Mines integration of humanities into an engineering course.

Multiple Intelligences

Gardner and Hatch (1989) have written that individuals use seven fairly independent forms of information processing either alone or in combination with each other. These seven forms of thinking or intelligences—logical mathematical, linguistic, musical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal—can be used as a basis for learning and assessing that learning. Gardner and Hatch report that "demands for assessments that are intelligence fair, are based on culturally valued activities, and take place within a familiar context naturally lead to an approach that blurs the distinctions between curriculum and assessment" (p. 6). Although the research in this area is not conclusive, the authors conclude that "the goal of detecting distinctive human strengths, and using them as a basis for engagement and learning, may prove to be worthwhile, irrespective of the scientific fate of the theory" (p. 9).

Contextual Learning

The SCANS report concludes that the most effective way of learning the three foundation skills and the five competencies needed by all students is by teaching those skills in context. According to a recent article in *Vocational Education Weekly* (Hudelson (Ed.), 1991), that means "placing learning objectives within real environments rather than first insisting that students learn in the abstract what they will be expected to apply" (p. 4). The Commission mentions three principles that guide contextual learning:

1. Students do not need to learn basic skills before they learn problem-solving skills. The two go together. They are not sequential but mutually reinforcing;

2. Learning should be reoriented away from mere mastery of information and toward encouraging students to recognize and solve problems; and

3. Real know-how—foundation and competencies—cannot be taught in isolation; students need practice in application of these skills.

SCANS gives several examples of contextual learning, including reading and math that are more concrete when embedded in systems or technological problems and personal characteristics are developed in team-work efforts.

Experiential Learning

"Experiential learning theory provides a model of a learning process that is consistent with the structure of human cognition and the stages of human growth and development" according to Kolb (1976, p. 2). The name, experiential learning, reflects the fact that experience plays an important role in the learning process. Kolb reports that the model describes the experiential learning cycle in four stages: (a) concrete experience; (b) observations and reflections; (c) formation of abstract concepts and generalizations; and (d) testing implications of concepts in new situations. The core or base for this model is that experience is translated into concepts, which, in turn, guide new experiences. Using this model, the learner moves from the actor to observer, from involvement to analytic detachment, and from the concrete to abstract.

Apprenticeships are one example of experiential learning. They allow learners to first experience the workplace and then connect those experiences to classroom concepts and generalizations. There is renewed interest by policy makers, business groups, and academic experts in the apprenticeship experience as a way to improve education (Harp, 1991). Advocates of experiential learning would see this renewed interest in a positive light.

Higher Order Thinking

Resnick (1987) reports that only in the last sixty years have schools identified higher order thinking skills as a goal for all students. The following list contains some key features of higher order thinking: nonalgorithmic, complex, multiple solutions, multiple criteria, uncertainty, self-regulation, imposing meaning, and effortful. According to Resnick, higher order thinking is currently taught in courses designed to teach reasoning and problem-solving as general skills applicable in many settings, and in discipline specific classes, such as mathematics and science. Resnick reports that "cognitive research shows the intimate relationship of subject matter knowledge to the reasoning process" (p. 49). She recommends that "we need both practical experimentation in schools and more

controlled instructional experimentation in laboratories to discover ways of incorporating our new understanding of the knowledge reasoning connection into instruction" (p. 49).

According to Resnick, there are a variety of current programs to teach higher order thinking, reasoning, and problem solving. Some of those programs approach higher order thinking as a general problem solving skill, unique and separate from any discipline area. According to Resnick, research indicates students taught using this approach tend to be more fluent in producing ideas. Other programs teach higher order thinking and problem solving in conjunction with a particular discipline. Resnick reports research indicates these programs are successful at raising grade point averages and are enthusiastically accepted by students. In addition to the two separate approaches, there are a number of programs combining the two approaches. Strategies for teaching reading and studying are typical of the combined approaches. In summary, Resnick believes the evidence to support teaching thinking skills as a separate topic is weaker than the evidence to support embedding instruction in thinking skills into the curriculum.

Thoughtful Learning

Schrag (1987) questions whether it is possible to teach higher order thinking in the high school. He makes the case that there are many barriers to that approach, including teachers who lack the skill to teach higher order thinking, and students who resist thinking and slide into less demanding tasks. He recommends that rather than focus on "thinking skills," the focus should be on the development of thoughtfulness. He states:

> Thoughtful people, regardless of the context in which they work, and regardless of the intelligence they possess, also share a character trait. Two dimensions are salient: reflectivity and flexibility. Good thinkers are reflective, by which I mean that they are deliberate and systematic rather than impulsive and capricious. By flexible, I mean able to see situations from different angles, thereby avoiding rigid, stereotyped responses. (p. 2)

He believes the classroom structure (i.e., the focus on discipline, correct answers, and objective tests) prevents the teaching of thoughtfulness. He recommends that thoughtfulness be taught using long blocks of time in other- than-classroom settings. According to Schrag, examples of appropriate climates would be specially developed "*junior* science laboratories, historical societies, social policy institutes, publishing houses, television stations . . ." These *junior think tanks*, as he calls them, could be focused on problems of concern to the students. The students, under the guidance of a teacher, would

develop the agenda, be allowed to make mistakes, master skills or ideas as needed, work cooperatively, and produce a product. He believes this "commitment to enhancing thoughtfulness will require a different kind of educational investment" (p. 4), one which will meet the demand for problem solvers in the workplace.

Parker (1991) defines thoughtfulness as "habits of the mind that incline one to behave reflectively—to think, to construct a model of the situations which impulsiveness or avoidance are tempting" (p. 98). He describes the thoughtful classroom as one where there is in-depth study on fewer topics and defines the thoughtful curriculum as essential subject matter, spiraled across grade levels, selected and organized to encourage student engagement, and using authentic exhibitions of learning.

Conclusions About Instruction

Instructional processes used in the classroom need to address unique needs of individual students and provide an environment conducive to learning for all students. The following synopsis of some instructional processes deals with those concerns:

- There are many theories that address unique learning styles. Teachers should be capable of using several of the theories to meet the student's needs.

- Cooperative learning, rather than competitive or individualistic, allows learners to acquire knowledge and skills through the realistic setting of having to work cooperatively with classmates.

- Brain-based learning involves designing and orchestrating lifelike, enriching and appropriate experiences for learners and ensuring that students' process experience in such a was as to increase the extraction of meaning.

- The concept of multiple intelligences addresses the goal of detecting distinctive human strengths, and using them as a basis for engagement and learning.

- Contextual learning, recommended by SCANS, involves placing learning objectives within real environments.

- Experiential learning recognizes that observation and reflection on concrete experiences allows the formation of abstract concepts and generalizations that can be used as a basis for concept formation in new situations.

- Higher order thinking, identified as a goal for all students, is nonalgorithmic, complex, has multiple solutions and multiple criteria, is based on uncertainty, self-regulated, meaningful, and effortful.

- Thoughtful thinking, according to Schrag, has two dimensions: reflectivity and flexibility. Thoughtful thinking usually requires an in-depth study of a few topics in other than the typical classroom setting.

Assessment

On Tuesday, August 27, 1991, the Minneapolis Star Tribune reported under the headline *SAT Verbal Scores Hit Record Low Nationally* that

> National average scores on the Scholastic Aptitude Test (SAT) sank to an all-time low for verbal skills in 1991, continuing a six-year slide that many blame on failure of schools and families to coax students into rigorous studies. (p. 1)

These SAT test results no doubt will be used by many to prove that the American education system is in desperate need of repair. Parents, politicians, and business people may say that the SAT score, a respected method of student assessment, can be used to justify that concern. However, before jumping to that conclusion, it might be judicious to review the concept of assessment and the methods, including standardized tests, that are currently being used to assess the knowledge and learning of students. The debate which occurs during this review should include some discussion about: (a) purposes of assessment; (b) current concerns about assessment; (c) criteria which could be used to develop assessment instruments; and (d) alternative types of assessment.

Before moving into the discussion about assessment, however, a working definition for the concept of assessment should be established. The definition varies depending on the focus of those who are discussing assessment. However, in this document and throughout this discussion, the concept of assessment will be used to include

any method of evaluating or measuring student performance and student understanding, establishing a *grade* for a student, or otherwise indicating student achievement. The definition includes benchmark, formative, and summative assessments. Traditional forms of assessments, such as standardized tests and achievement tests, as well as alternatives, such as portfolios, projects, and other realistic performance demonstration techniques, will be included in the concept of assessment.

Purposes of Assessment

According to Resnick and Resnick (1985), student assessments can be used in two ways to set and maintain educational standards. First, they can be used to monitor the performance of the schools, and, second, they can be used to monitor the performance of individual students. Resnick and Resnick make the argument that traditionally the standardized tests and examinations have been directed toward the first purpose rather than the second. They provide the following justifications for their positions.

Monitoring the Performance of Schools

Assessment as a monitor of performance of schools has existed since standardized tests were introduced into American schools late in the 19th century. At that time, the short answer and multiple choice questions on the test met the same type of efficiency standards that were being used by industry during that period. They were considered cost-efficient and objective, and, of particular importance, they provided comparisons of districts and schools. There are a number of reasons that those comparisons of schools have been and still are important. Resnick and Resnick (1985) report:

> The spectacular growth in the use of standardized achievement tests over the last thirty years has been partly due to demands for evaluation of various mandated and specially funded programs in the schools and partly to demands by parents and other citizens' groups--especially minorities--for information on the performance of various schools within the district. (p. 12)

The current demands for this type of reporting are evident in several reports. One example is the "Accountability Package" of the *America 2000* report (U.S. Department of Education, 1991). The package includes the establishment of world class standards, nationwide examinations, and report cards on schools. A second example of this purpose of assessment is reflected in Minnesota's outcome-based education (OBE) assessment and feedback process (Minnesota Department of Education, 1990) that suggests a need to report

aggregate student data. It appears, based on these reports and others, that the demand for reporting aggregate assessment data will continue.

Monitoring the Performance of Students

Assessment as a means of monitoring student performance and understanding, which includes identifying student needs and motivating students toward improved performance, has been less effective. The current standardized tests, such as the SAT and the ACT, are not aligned with the curriculum in schools; they are not meant to be "studied for," and do not provide useful feedback for students. Resnick and Resnick (1985) believe this should be remedied—that assessment and curriculum should be aligned. They comment that

> there is reason to believe that educational systems that are marked by periodic examination for which schools deliberately prepare their student have built-in mechanisms for standards maintenance and improvement. . . . (p. 12)

They go on to report that examinations aligned with curriculum improve education in two ways. First, they exert influence on the style of teaching, and, second, they certify that the student has learned. The Minnesota OBE assessment and feedback process includes a suggestion to have a reporting plan that recognizes the need to provide teachers and students with individual student performance information. This plan based on both formative and periodic summative assessment can be used as a process for identifying needs and moving students toward improved performance.

Current Concerns About Assessment

Concerns about assessment have been voiced by educators, parents, and business people. Some of those concerns address the inadequacies of certain forms of assessment and some address the fact that assessment can be an actual barrier to education.

Currently, the concern about assessment includes talk about raising standards in education and establishing "national standards" through tests such as those being developed for the National Assessment of Educational Progress (NAEP). One example of the cry for national tests comes from *America 2000* (1991). The report states:

> [A] new nationwide examination system will be developed, based on five core subjects, tied to the "world class standards." These tests will be

> designed to foster good teaching and learning as well as to monitor student progress. (p. 21)

Wiggins (1990), Director of research for Consultants on Learning, Assessment and School Structure (CLASS), is concerned about simply raising standards. He believes that to many people, raising standards means nothing more than raising test scores. He warns that standards must refer to qualities, not quantities. High standards, according to Wiggins (1991), "are not stiffer test-result quotas but a more vigorous commitment to intellectual values upheld consistently and daily in the face of entropy, fatalism, and the occasional desire on everyone's part to not give a damn" (p. 20). He believes that demanding and getting quality means framing standards in terms of the work that we undertake and value. Therefore, he advises that less than quality work be rejected and not accepted until it is up to the established high standard. He concludes with the following mandate to educators:

> Let us have standards and measures that empower their users: through exemplars and criteria that give insight into the performances and virtues most valued by the wider society and through the requirement of quality, whatever local form it may take. (p. 24)

Resnick and Klopfer, (1989) expressed concern about the impact of testing on the teaching of thinking and reasoning. They found that tests which contain collections of unconnected questions "accord badly with the principles of learning and thinking put forward by cognitive researchers" (p. 209). They recommend the use of performance assessments (discussed later in this paper) for all school subjects if the thinking curriculum is to succeed.

There are several other concerns in addition to those stated above. For example, according to a recent National Center on Effective Secondary Education newsletter (1987), "Tests are attacked for their cultural bias or their sanctification of trivial forms of knowledge" (p. 1). Furthermore, the National Center reports that other subtle criticisms include incomplete and misleading information and the fact that half of the students will always score below average.

Although it appears that some form of national or state-mandated assessments may be required, the concern about the use of those forms of assessments needs to be addressed. Raising standards, permitting a thinking curriculum, eliminating cultural bias, providing accurate data, and allowing all students to achieve must be incorporated into the assessment process.

Criteria for Assessment

In order to adhere to Wiggins' mandate and identify the types of assessment that are most effective, we must first ask ourselves "What kind of information do we want?" The National Center on Effective Secondary Schools (1987) discusses the following criteria which can be used to answer that question:

1. Did the student succeed in meeting the educational goals?

2. What does the assessment say about how the student, teacher, or school might improve?

3. Can or should the assessment provide comparative judgments or ranking of student performance?

The National Center on Effective Secondary Schools summarizes the previous questions as accountability, improvement, and selection allocation. They report that assessments which serve one of the above purposes may not necessarily serve the others.

In addition, according to the National Center, one fundamental issue needs to be addressed during assessment: "Does the information collected represent an accurate estimate of significant knowledge or mastery?" (p. 1) They state specifically:

> Tests have been criticized especially for their failure to measure competence as expressed in "real life" situations beyond school, especially as people speak and write to one another, as they try to comprehend the written work, and as they try to solve mechanical, biological, or civic problems. (p. 1)

Currently, the Secretary's Commission on Achieving Necessary Skills (SCANS) report (1991) discusses teaching, assessing, and learning. They recognize that simply identifying competencies is not enough. They write, "Schools must teach them. Students must learn them. And, they should be assessed as part of the America 2000 agenda" (p. xxi). Although the SCANS report recommended that students be assessed by means of formal, nationally comparable assessments, they also state that less formal assessment can be made through other curriculum activities, such as "team efforts, school projects and diaries, notebooks, and records of experiments maintained in each student's portfolio" (p. 20). They are concerned about the types of assessments that will be used. According to the report:

> SCANS is convinced that most existing tests—largely pencil and paper, multiple-choice tests of short-term memory—do little to advance the cause of learning. Effective assessment techniques should support instruction and students' knowledge of their progress. (p. 29)

They also recommend that the assessment process be examined to ensure "fairness for students from different social, racial, and economic backgrounds" (p. 29), and that assessments "must be designed so that, when teachers teach and students study, both are engaged in authentic practice of valued competencies" (p. 29). And, finally, they suggest that the assessment measure "mastery of specific, learnable competencies" (p. 30) that will be used to credential students. They conclude with the thought that assessment can help improve achievement, not simply monitor it.

In summary, the following questions should be considered when developing assessments:

1. What kind of information do we want?

2. Does the information collected represent an accurate estimate of significant knowledge or mastery?

3. Does the assessment support instruction and students' knowledge of their progress?

4. Is it fair for students from different social, racial and economic backgrounds?

5. Is it designed so that both students and teachers are engaged in authentic practice of valued competencies?

6. Does it help improve achievement, not simply monitor it?

Alternative Types of Assessment

"What does a youngster do who resourcefully uses his/her mind?" Sizer (1989), director of the Coalition for Essential Schools, recommends that thought be given to that question and the following question: "What do they do to deserve our respect?" He suggests that the answers to those questions will not be subject matter, age, or class specific. However, those answers will "throw a shadow backwards;" they will provide

direction in both the curriculum and assessment debate. In essence, the curriculum is developed based on the answers to Sizer's questions and assessments are used to determine whether or not the student has mastered the curriculum.

Sizer recommends that once those questions are answered, students should be required to "exhibit" their control of the material, their mastery of the material and their ability to use the material. He suggests that this 18th century Academy notion of "exhibition" or performance be used to assess youngsters. In an expansion of this concept, he suggests that ideas be expressed in more than one medium. His suggestions include draw a picture, write a definition, defend in a discussion, write a bar of music, write a play, or do a pantomime. Each of those suggestions is an "exhibition" of the understanding and the mastery of the idea.

Archbald and Newmann (1987) appear to agree with Sizer's philosophy about exhibiting performance. They ask "What forms of human accomplishment should schools cultivate?" (p. 5). They believe that once the concepts are formulated, indicators or measurements can be developed to "estimate 'how many of' and 'how well' these accomplishments have been mastered" (p. 5). The following quote develops this philosophy:

> A useful and valid assessment system must not only provide information about the actual type and quality of competence that students have achieved; it must also base its assessments on achievement considered significant, meaningful, and authentic. (p. 5)

Newmann (1990) described his vision of authentic student achievement. Authentic achievement requires that students produce knowledge that has value beyond proving their competence in school. He suggests that mastery as currently demonstrated on tests is unlikely to reach that goal. Instead, he suggests that "long-term projects which result in discourse, things, and performances of interest to students, their peers and the public at large" (p. 4) would be better ways of expressing achievement. According to Newmann, authentic achievement has value for two reasons: (a) participation in authentic tasks is a motivator for students because it has value beyond school; and (b) it allows the use of higher order thinking and problem-solving capacities.

Criteria for Authentic Assessment

Archbald and Newmann (1987) suggest four criteria be used by schools for assessment of authentic academic achievement. These include: (a) "academic learning should involve a formal, disciplined study of knowledge" (p. 5); (b) "the completion of the task should have aesthetic or utilitarian value apart from determining the competence of the learner" (p. 6); (c) "assessment should be conducted in ways that honor the integration of knowledge" (p. 6); and (d) diverse forms of intellectual accomplishment should be acknowledged. They recognize the difficulties inherent in developing these assessments.

Examples of Authentic Assessment

The National Center on Effective Secondary Schools (1987) provides the following examples of alternatives to standardized tests which apply the authentic assessment philosophy:

1. Walden High School, Racine, Wisconsin, uses a "Rite of Passage Experience" which requires that seniors "demonstrate mastery in fifteen areas of knowledge and competence by completing a portfolio, project, and fifteen presentations" (p. 8) before a committee. The portfolio contains summarized descriptions of accomplishment, samples of writing, photographs, formal records and diaries, as well as other evidence of academic performance. The project includes an oral presentation of a research paper. In addition to the presentations required for the portfolio and the project, six additional presentations are required in the following subject areas: mathematics, American government, personal proficiency, geography, English.

2. Learning Unlimited, an Indianapolis school-within-a-school, uses a learning contract as the basis for evaluation. The learning contract contains a set of general goals and a process for completing a minimum of twenty-four hours of community-based learning experiences. The contract serves as a basis for grades and "the grade is decided between the student and the teacher at a conference" (p. 10). According to the report, each class offered provides "the subject-matter to which community projects and real-world experiences are related, and each class is a vehicle to exhibit individual achievements" (p. 10).

3. Frontenac Secondary School, Ontario, Canada, requires that half of the final exams in technological courses be "hands-on performance in the tasks for which students have been trained" (p. 10). For example, in electrical studies students are required to construct an alarm unit, and in auto mechanics students are required to identify actual mechanical problems and make recommendations.

Wiggins (1991) discusses something similar to authentic achievement when he talks about establishing standards that are evaluated by "necessarily varied student products and performances" (p. 19). He believes the only way to improve schools is to use authentic standards and measures. According to Wiggins, standards need to be established and students need to be given progress reports regarding how close they are to meeting the standards. He believes that one purpose of assessment is to provide a guiding picture of the student's movement toward a real standard. He acknowledges that vocational programs, athletic departments, art, music, and debate classes already use real standards. However, that is not true of the traditional academic subjects. He suggests that the traditional academic subjects move toward establishing authentic standards for their programs.

Spady's and Marshall's (1991) suggestions about assessments in their descriptions of transformational OBE closely parallel the thoughts of Archbald, Newmann, and Wiggins. They describe transformational OBE as differing from traditional OBE in that the "curriculum content is no longer the grounding and defining element of outcomes" (p. 2). They comment that in transformational OBE

> outcomes are seen as culminating exit role performances which include sometimes complex arrays of knowledge, competencies, and orientations and which require learning demonstrations in varying role contexts. (p. 2)

They believe that the student's learning must be demonstrated with higher order processes and complex, transdisciplinary role performances that simulate, if not create, real life conditions that matter to students after they finish school.

Likewise, Mitchell, (1990) associate director of the Council for Basic Education, recognizes the need for performance assessment (also called authentic or alternative assessment) to directly measure actual performance in subjects. In an *Education Week* commentary, she gives several examples of performance assessment, including open-ended mathematics questions, the use of portfolios, "exhibitions" that demonstrate student

mastery, and writing assessments. She reports that performance assessments benefit education in three ways: (a) they reveal the presence of thoughtfulness and understanding, not memorization; (b) they require that a thinking curriculum be taught to all students; and (c) they involve teachers in assessment.

A final, if slightly different, look at assessment is evident in the work of Stasz, McArthur, Lewis and Ramsey (1990). They introduce individualized evaluation as a substitute for a single set of standards for all students. They believe that many classes currently have a predetermined set of standards that emphasize uniform skills. Their recommendation is that a nonuniformity in assessment permits teachers to personalize assessment. However, they warn, different standards do not mean lower standards. They are, instead, "a natural response to student diversity... be it ethnic, racial, experiential, or academic" (p. 24).

Conclusions About Assessment

Traditionally, student assessments have frequently taken the form of paper and pencil tests. This discussion about alternative types of assessment points in another direction—a hands-on type of assessment. Sizer's exhibition of mastery discussion, Archbald and Newmann's philosophy about authentic performances, Wiggin's establishment of real standards, Spady's and Marshall's thoughts about transformational OBE, Mitchell's discussion about performance assessment and the Stasz, McArthur, Lewis, and Ramsey comments about personalizing assessment all suggest that there are well thought out, progressive alternatives to the traditional forms of assessment. These alternative forms could provide some direction during the assessment debate.

The following statements summarize some of ideas that might be addressed during the debate which surrounds the assessment of students:

- The term assessment includes any method of evaluating or measuring student performance, establishing a grade for a student, or otherwise indicating student achievement.

- The two main purposes of assessment are to monitor the performance of schools and monitor the performance of individual students.

- The demand for aggregate assessment scores to monitor the performance of schools is likely to continue.

- Monitoring individual performance to identify student needs and motivate students toward improved performance has not been as effective as monitoring for the purpose of evaluating schools.

- Currently, there is a considerable amount of discussion surrounding the need to raise standards in education and establish national tests for those standards.

- Standards must refer to quality, not quantity. Quality standards need to be framed around the work that is undertaken and valued.

- Current tests, which contain collections of unconnected questions, do not assess, and may actually impede the teaching of the thinking curriculum.

- Assessments should be developed based on answers to the following questions:

    1. What kind of information do we want?
    2. Does the information collected represent an accurate estimate of significant knowledge or mastery?
    3. Does the assessment support instruction and students' knowledge of their progress?
    4. Is it fair for students from different social, racial and economic backgrounds?
    5. Is it designed so that both students and teachers are engaged in authentic practice of valued competencies?
    6. Does it help improve achievement, not simply monitor it?

- Several alternative forms of assessment are available. These forms, for the most part, require an actual performance of an authentic activity. Exhibition of mastery, authentic achievement, performance assessment, personalized assessment, and transformational OBE are just some of the names used to identify this concept.

- Real standards are based on the performances and virtues most valued in society. Assessments can be used to measure achievement of real standards.

Recommended Design Specifications for the Learning Process

After reading and discussing the review of related research and practice concerning the learning process in high schools, the Design Group for the project was asked to synthesize the desired characteristics of the learning process for new designs for the comprehensive high school. Through use of the nominal group process and consensus seeking, the following features of the learning process were identified as important design specifications:

1. Learning process is aligned with learner outcomes. Components of learning process (i.e., curriculum, instruction, and assessment) are aligned among themselves.
2. Learning process uses integrated curriculum.
3. Learning process uses assessment to improve learning.
4. Learning process is relevant to real life.
5. Learning process is personalized.
6. Learning process is active and experiential.
7. Learning process is emancipative.
8. Learning process is engaging.
9. Learning process is rigorous.
10. Learning process creates feeling of community of learning.

References

Alternatives to standardized tests: Three examples. (1987). *National Center on Effective Secondary Schools Newsletter, 2*(2), 8-10.

Archbald, D. A., & Newmann, F. M. (1987). What is authentic academic achievement? *National Center on Effective Secondary Schools Newsletter, 2*(2), 5-7.

Beauchamp, G. A. (1975). *Curriculum theory.* Wilmette, IL: Kagg Press.

Beck, R. H., Copa, G. H., & Pease, V. H. (1991). *An uncommon education: Interaction and innovation.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Boyer, E. L. (1983). *High school.* New York, NY: Harper & Row.

Brandt, R. S. (1988). *Introduction: What should schools teach?* Alexandria, VA: Association of Supervision and Curriculum.

Brandt, R. S. (1990). On learning styles: A conversation with Pat Guild. *Educational Leadership, 48*(2), 10-13.

Caine, R. N., & Caine, G. (1991). *Teaching and the human brain.* Alexandria, VA: Association for Supervision and Curriculum Development.

Copa, G. H. (1992). *A framework for the subject matter of vocational education?* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Doll, W. E., Jr. (1988). Curriculum beyond stability: Schon, Prigogine, Piaget. In W. F. Pinar (Ed.), *Contemporary curriculum discourses* (pp. 114-133). Scottsdale, AZ: Gorsuch, Scarisbrick.

Dunn, R., & Griggs, S. A. (1988). *Learning styles: Quiet revolution in American secondary schools*. Reston, VA: National Association of Secondary School Principals.

Eisner, E. W., & Vallance, E. (1974). *Conflicting conceptions in curriculum*. Berkeley, CA: McCutchan.

Gardner, H., & Hatch, T. (1989). Multiple intelligences go to school. *Educational Researcher, 78*(8), 4-10.

Goodlad, J. I. (1984). *A place called school*. New York, NY: McGraw-Hill.

Harp, L. (1991). Demands of information age revive old idea of apprenticeship. *Education Week, 4*(37), 1, 18-19.

Hudelson, D. (Ed). (1991). SCANS report urges *contextual learning*. *Vocational Education Weekly, 4*(15), 3-4.

Johnson, D. W., Johnson, R. T., & Holubec, E. J. (1986). *Circles of learning: Cooperation in the classroom*. Edina, MN: Interaction.

Kirrane, D. E. (Ed.). (1988). *Info-line: Training and learning styles*. Alexandria, VA: American Society for Training and Development.

Kolb, D. A. (1976). *Learning inventory technical manual*. Boston, MA: McBer & Co.

Macdonald, J. B. (1988). Curriculum, consciousness, and social change. In W. F. Pinar (Ed.), *Contemporary curriculum discourses* (pp. 156-174). Scottsdale, AZ: Gorsuch, Scarisbrick.

McCarthy, B. (1990). Using the 4MAT system to bring learning styles to schools. *Educational Leadership, 48*(2), 31-37.

McNeil, J. D. (1990). *Curriculum: A comprehensive introduction*. Los Angeles, CA: Harper Collins.

Minnesota Department of Education. (1990). *A Minnesota vision for OBE.* St. Paul, MN: Author.

Mitchell, R. (1990, January 24). Reconsidering standards and assessment: Performance assessment: An emphasis on activity. *Education Week, 36,* 25.

National Center on Effective Secondary Schools. (1987). *National Center on Effective Secondary Schools Newsletter, 2*(2), 1.

National Commission on Excellence in Education. (1983). *A nation at risk.* Washington, DC: U.S. Government Printing.

Newmann, F. M. (1990, April). *Linking restructuring to authentic student achievement.* Paper presented to the Indiana University Annual Education Conference, Bloomington, IN.

Parker, W. C. (1991). *Renewing the social studies curriculum.* Alexandria, VA: Association for Supervision and Curriculum Development.

Phi Delta Kappa. (1983). *The reports: Challenge and opportunity.* Bloomington, IN: Phi Delta Kappa. (Available from Phi Delta Kappa, Bloomington, IN.)

Portelli, J. P. (1987). Perspectives on defining curriculum. *Journal of Curriculum and Supervision, 2*(4), 354-367.

Plihal, J., Johnson, M. A., Bentley, C., Morgaine, C., & Liang, T. (1992). *Integration of vocational and academic education: Theory and practice.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Resnick, D. P., & Resnick, L. B. (1985). Standards, curriculum, and performance: A historical and comparative perspective. *Educational Researcher,* 5-20.

Resnick, L. B. (1987). *Education and learning to think.* Washington, DC: National Academy Press.

Resnick, L. B., & Klopfer, L. E. (1989). Toward the thinking curriculum: Concluding comments. *Toward the thinking curriculum: Current cognitive research.* Alexandria, VA: Association for Supervision and Curriculum Development.

SAT verbal scores hit record low nationally. (1991, August 27). *Minneapolis Star-Tribune*, p. 1.

Schrag, F. (1987). Thoughtfulness: Is high school the place for thinking? *National Center on Effective Secondary Schools Newsletter, 2*(1), 2-4.

Secretary's Commission on Achieving Necessary Skills (SCANS). (1991). *What work requires of schools: A SCANS report for America 2000.* Washington, DC: U.S. Department of Labor.

Sizer, T. (1984). *Horace's compromise.* Boston, MA: Houghton Mifflin.

Spady, W., & Marshall, K. (1991). *Useful demonstration verbs for defining enabling competencies and culminating role performance outcomes of significance.* Unpublished manuscript.

Stasz, C., McArthur, D., Lewis, M., & Ramsey, K. (1990). *Teaching and learning generic skills for the workplace.* Berkeley: , National Center for Research in Vocational Education, University of California at Berkeley.

Taba, H. (1962). *Curriculum development: Theory and practice.* New York, NY: Harcourt, Brace, & World.

U.S. Department of Education. (1991). *America 2000.* Washington, DC: U.S. Government Printing Office.

Wiggins, G. (1990, January 24). Reconsidering standards and assessment: Standards should mean qualities, not quantities. *Education Week, 36*, 25.

Wiggins, G. (1991). Standards not standardization: Evoking quality student work. *Educational Leadership, 48*(5), 18-25.

Williams, H. Y., Stockton, W. S., & Kimpston, R. D. (in press). Ways of knowing and the curriculum. *Education Forum.*